

fly higher to attain a useful range with reasonable fuel economy and to maintain responsiveness to changes in terrain" (p.128). It is therefore recommended that those supersonic cruise missiles with a range exceeding 600 km be banned. The impact of remaining cruise missiles on crisis stability will be negligible given that the slower undetectable cruise missiles would not be an effective first strike weapon. Consequently, a test ban for long-range supersonic cruise missiles might help to maintain crisis stability and would be verifiable insofar as faster, higher flights or rocket powered cruise missiles can be detected using radar. Difficulties remain in that it is impossible to distinguish a conventionally armed cruise missile from a strategic one. While the maximum range of the missile might give an indication of its mission, the cruise needn't be tested at its full range, so that its real capability remains unknown.

Another area of weapons development which might be subject to a test ban is anti-satellite (ASAT) weapons. These will have a direct impact on verification insofar as they are a potential threat to a nation's satellites including those used for verification. Different kinds of ASAT systems will affect crisis stability to varying degrees, and some will be more amenable to a test ban than others.

A test ban on anti-satellite weapons would not only be desirable and feasible, but it would also be verifiable. It is acknowledged that verification capabilities for monitoring activities in outer space are largely unknown, but advancements in sensor technology are anticipated which would facilitate the task of verification. For example, improvements in non-optical infra-red millimetre wave sensors and synthetic aperture radar which allow better night-time and all-weather observation will also enhance space-based monitoring systems. The HALO technology program (High Altitude Large Optics) has developed a mosaic focal plane infra-red detector which is capable of detecting and tracking spacecraft, aircraft and cruise missiles. Another project "is proceeding with its satellite infra-red experiment to demonstrate feasibility of long wavelength infra-red sensors in detecting and tracking objects in space" (p.138). It does so by detecting the thermal radiation of objects against the 'coldness of space'. While the Soviet verification capability is largely unknown, they probably lag behind US abilities. This shortcoming is offset, however, by the Soviet Union's lesser requirement for verification. Thus, "it seems quite possible, given existing monitoring capabilities, to follow killer satellites placed in orbit by missile launchers" (p.139).

Some problems of verification are foreseen with the development of anti-satellite weapons, however. It may be difficult to detect and monitor such weapons placed in space via a space shuttle. US interceptor anti-satellite weapons which are launched from aircraft will also be hard to monitor, since they may be launched without